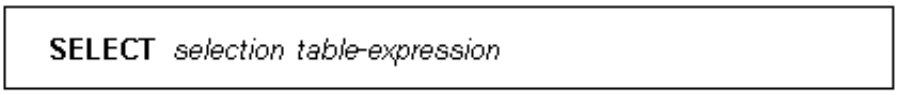
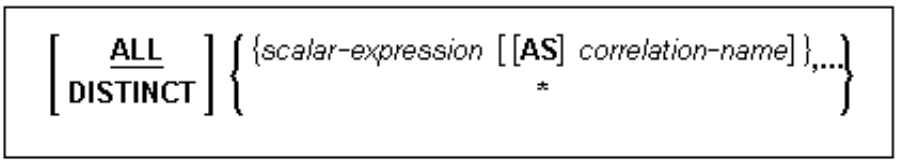
Select Expressions

select-expression



A *select-expression* specifies a result table.

selection



The *selection* specifies the items to be selected.

ALL/DISTINCT

Duplicate rows are not automatically eliminated from the result of a *select-expression*. To request this, specify the keyword DISTINCT.

The alternative to DISTINCT is ALL. ALL is assumed if neither is specified.

scalar-expression

Instead of, or as well as, simple column names, a selection can also include general *scalar-expressions* containing scalar operators and scalar functions which provide computed values (see also the section Scalar Expressions).

Example:

```
SELECT NAME, 65 - AGE
  FROM SQL-PERSONNEL
  ...
```

correlation-name

A *correlation-name* can be assigned to a *scalar-expression* as alias name for a result column.

The *correlation-name* need not be unique. If no *correlation-name* is specified for a result column, the corresponding *column-name* will be used (if the result column is derived from a column name; if not, the result table will have no name). The name of a result column may be used, for example, as column name in the ORDER BY clause of a SELECT statement.

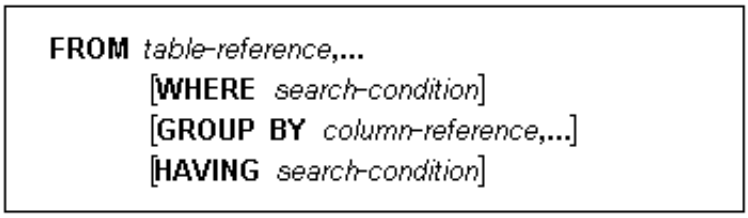
Asterisk Notation - *

All columns of all tables specified in the FROM clause are selected.

Example:

```
SELECT *
  FROM SQL-PERSONNEL, SQL-AUTOMOBILES
  ...
```

table-expression



The *table-expression* specifies from where and according to what criteria rows are to be selected.

FROM Clause

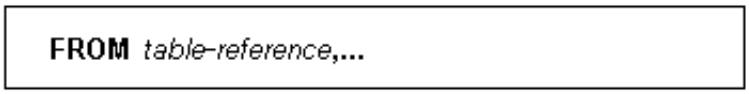
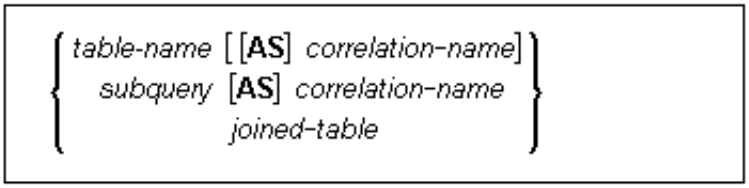


table-reference



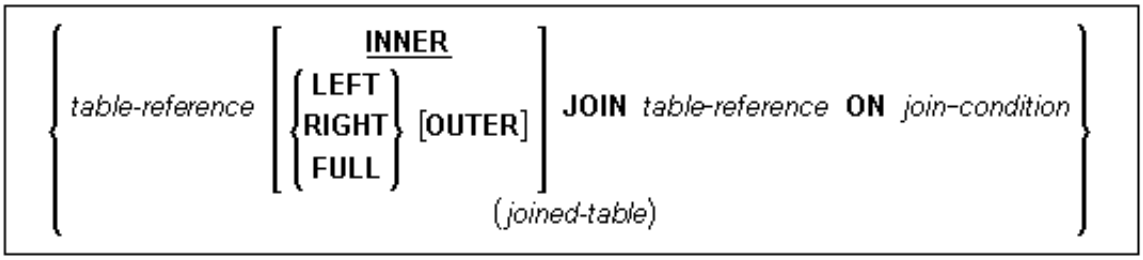
The tables specified in the FROM clause must contain the column fields used in the selection list.

You can either specify a single table or produce an intermediate table resulting from a subquery or a "join" operation (see below).

Since various tables (that is, DDMs) can be addressed in one FROM clause and since a *table-expression* can contain several FROM clauses if *subqueries* are specified, the database ID (DBID) of the first DDM specified in the first FROM clause of the whole expression is used to identify the underlying database involved.

Optionally a *correlation-name* can be assigned to a *table-name*. For a *subquery*, a *correlation-name* must be assigned.

joined-table

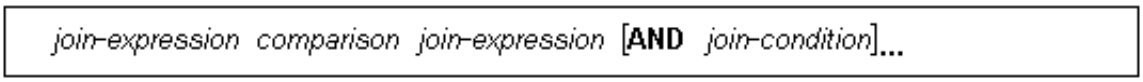


A *joined-table* specifies an intermediate table resulting from a "join" operation.

The "join" can be an INNER, LEFT OUTER, RIGHT OUTER or FULL OUTER JOIN. If you do not specify anything, "INNER" applies.

Multiple "join" operations can be nested; that is, the tables which create the intermediate result table can themselves be intermediate result tables of a JOIN operation or a *subquery*; and the latter, in turn, can also have a *joined-table* or another *subquery* in its FROM clause.

join-condition



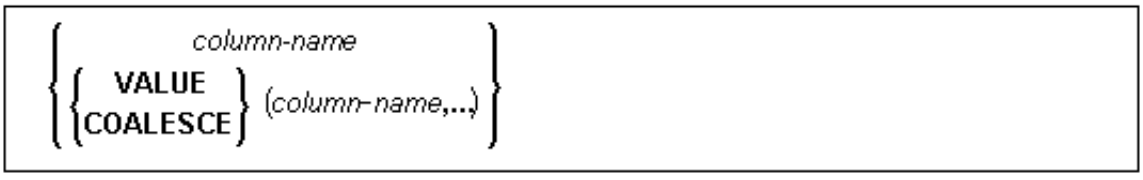
AND

Multiple *join-conditions* can be combined with AND.

For a FULL OUTER JOIN, only the equal sign (=) is allowed as *comparison*. See details on comparison.

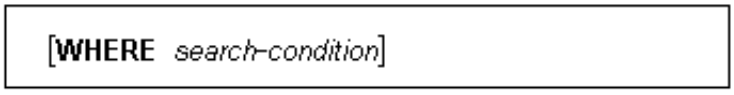
The first *join-expression* must refer to the first *table-reference*, the second *join-expression* must refer to the second *table-reference*.

join-expression



Within a *join-expression* only *column-names* and the *scalar-function* VALUE (or its synonym COALESCE) are allowed. See details on column-name.

WHERE Clause



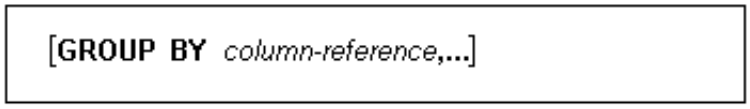
The WHERE clause is used a to specify the selection criteria (*search-condition*) for the rows to be selected.

Example:

```
DEFINE DATA LOCAL
01 NAME   (A20)
01 AGE    (I2)
END-DEFINE
...
SELECT *
  INTO NAME, AGE
  FROM SQL-PERSONNEL
  WHERE AGE = 32
END-SELECT
...
```

See further information on *search-condition* .

GROUP BY Clause



The GROUP BY clause rearranges the table represented by the FROM clause into groups in a way that all rows within each group have the same value for the GROUP BY columns.

Each *column-reference* in the selection list must be either a GROUP BY column or specified within an *aggregate-function*. *Aggregate-functions* are applied to the individual groups (not to the entire table). The result table contains as many rows as groups.

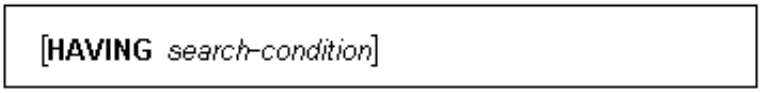
See further details on column-reference and aggregate-function.

Example:

```
DEFINE DATA LOCAL
1 #AGE     (I2)
1 #NUMBER  (I2)
END-DEFINE
...
SELECT AGE , COUNT(*)
  INTO #AGE, #NUMBER
  FROM SQL-PERSONNEL
  GROUP BY AGE
  ...
```

If the GROUP BY clause is preceded by a WHERE clause, all rows that do not satisfy the WHERE clause are excluded before any grouping is done.

HAVING Clause



If the HAVING clause is specified, the GROUP BY clause should also be specified.

Just as the WHERE clause is used to exclude rows from a result table, the HAVING clause is used to exclude groups and therefore also based on a *search-condition*. *Scalar-expressions* in a HAVING clause must be single-valued per group.

See further details on scalar-expression and *search-condition* .

Example:

```
DEFINE DATA LOCAL
1 #NAME     (A20)
1 #AVGAGE   (I2)
1 #NUMBER   (I2)
END-DEFINE
...
SELECT NAME, AVG(AGE), COUNT(*)
  INTO #NAME, #AVGAGE, #NUMBER
  FROM SQL-PERSONNEL
  GROUP BY NAME
  HAVING COUNT(*) > 1
  ...
```

